

I-16.01 List of Definitions

Following is a list of definitions of words or acronyms commonly used on the plans, or on design documents:

AASHTO - American Association of State Highway and Transportation Officials.

ADT - Average daily traffic. The projected or forecast average daily traffic for the design year of the proposed improvement.

AHW - Allowable headwater elevation. The allowable water surface elevation upstream from a culvert or other drainage structure.

AWS - Allowable water surface elevation. The water surface elevation above which damage will occur.

Access Control - The regulated limitation of access is called access control, which is achieved through the regulation of public access rights to and from properties abutting the highway facilities. These regulations are generally categorized as full control of access, partial control of access, and driveway and approach regulations.

Full control of access means that preference is given to through traffic by providing access only with selected public roads and by prohibiting crossing at grade and direct private driveway connections. With partial control of access, preference is given to through traffic to a degree that, in addition to access connections with selected public roads, there may be some crossing at grade and some private driveway connections. Full or partial access control generally is accomplished by legally obtaining right-of-access from the abutting property owners (usually at the time of purchase of right-of-way) or by the use of frontage roads.

Driveway or approach regulations may be applied even though no control of access is obtained. Each abutting property is allowed access to the street or highway; however, the location, number, and geometrics of the access points may be governed by the regulations.

Arterial - Part of the functional system of roads and highways. The hierarchy of the functional systems consists of principal arterials (for main movement), minor arterials (distributors), major and minor collectors, and local roads and streets. Arterials may be either rural or urban. A rural arterial system has the following service characteristics: corridor movement with trip length and density suitable for substantial statewide or interstate travel; movements between all, or virtually all, urban areas with populations over 50,000 and a large majority of those with populations over 25,000; and integrated movement without stub connections, except where unusual geographic or traffic flow conditions dictate otherwise as at international boundaries.

The urban principle arterial system serves the major centers of activity of urbanized areas, the highest traffic volume corridors, and the longest trip desires and carries a high proportion of the total urban area travel on a minimum of mileage. The urban minor arterial interconnects with and augments the principle arterial system. It accommodates trips of moderate length at a somewhat lower level of travel mobility than principle arterials.

For a more complete definition of this system, see the AASHTO “Greenbook”.

Asphalt Treated Drainable Base - A mixture of special gradation aggregate and asphalt, of designated thickness and minimum target permeability of 1,500 feet per day, placed on the subgrade or subbase to provide a suitable foundation for concrete pavement and also serves to expeditiously drain water from the pavement structure. See also cement treated drainable base.

Backslopes - The area between the outer edge of the highway ditch bottom and the natural ground level adjacent to the highway.

Backwater - The increased depth of water upstream from a dam, culvert, bridge, or other drainage structure due to the flow constriction caused by the structure.

Base Course - The layer(s) of a designated thickness material placed upon the subgrade or subbase to provide suitable foundation for the surface course. This is generally a material consisting of crushed aggregate mixed with a stabilizing agent, such as clay, asphalt, or Portland cement.

Bituminous Material - Any of the various asphalt cements, cutback asphalts, or emulsified asphalts used for highway construction.

Bituminous Mixture - Any of the various mixtures of aggregate and bituminous material, either plant mix or road mix, used for highway construction.

Bituminous Prime Coat - A low viscosity bituminous material applied to an absorbent surface, usually an aggregate base course, to coat and bind the mineral particles in preparation for placing a bituminous mixture or a bituminous seal coat, or to serve as a temporary all-weather surface.

Bituminous Seal Coat - A thin surface treatment consisting of the application of liquid bituminous material to the roadway surface, followed by the application of aggregate cover material.

Bituminous Stabilized Base - Generally a mixture of crushed aggregate and bituminous stabilizing material, of a designated thickness, placed upon the subgrade to provide a suitable foundation for a surface course.

Bituminous Surface Treatment - A general term referring to a thin surface treatment which may include a bituminous prime coat, a bituminous seal coat, a single bituminous surface treatment, or a double bituminous surface treatment.

Bituminous Treated Base - A mixture of crushed aggregate and bituminous material, of a designated thickness, placed upon the subgrade to provide a suitable foundation for the surface course.

Blended Base - A unique type of aggregate base material, where all, or nearly all, of the existing surfacing (including base and additional virgin aggregate) is ground and mixed “in place”, or blended off site and hauled back to the roadway, to form a blended base.

Blotter Sand - A granular material sometimes applied to fog coats, prime coats, or seal coats to take up excess liquid asphalt on the roadway surface and prevent pickup or tracking by vehicles.

Box Length - Length of a box culvert measured along the centerline of the RCB, including parapet walls.

Bridge (Major Structure) - A structure, including supports, erected over a depression or an obstruction, such as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads, and a length, measured along the center of roadway, of at least 20 feet between inside edges of abutments or extreme ends of openings for multiple- barrel box culverts.

CADD - Computer-Aided Design and Drafting.

Categorical Exclusion (CATEX) - A statement prepared by the NDDOT, normally early in the project development process, to inform the FHWA of projects that meet the definition contained in 23CFR771 and, based on past experience with similar projects, do not involve significant environmental impacts.

Cement Treated Drainable Base - A mixture of special gradation aggregate, Portland cement, and water, of a designated thickness and with a minimum target permeability of 1,500 feet per day, placed upon the subgrade or subbase to provide a suitable foundation for concrete pavement and also serves to expeditiously remove water from the pavement structure. See also asphalt treated drainable base.

Change Order - A procedure by which the terms of an active construction contract are changed.

Channel - A defined natural or artificial waterway that periodically or continuously contains moving water. It has a definite bed and banks that confine the water. A road ditch, therefore, would be considered a channel.

Clear Roadway Width - The horizontal distance from face of curb to face of curb, or face of guardrail to face of guardrail, whichever is less.

Clear Zone - The total roadside border area, starting at the edge of the traveled way, available for safe use by errant vehicles. This area may consist of a shoulder, a recoverable slope, a non-recoverable slope, and/or a clear run-out area. The desired width is dependent upon the traffic volume and speeds, and on the roadside geometry.

Cold Mix - Generally, a plant-mixed bituminous mix that is placed in stockpiles after mixing, and used in a cold condition directly out of the stockpile for maintenance and repair of asphalt driving surfaces.

Collector - A part of the functional highway classification system. May be classified as rural or urban, major or minor collectors. Generally, rural collectors serve travel of primarily intra-county rather than statewide importance and constitute those routes on which predominant travel distances are shorter than on arterial routes. Consequently, more moderate travel speeds may be typical. The urban collector street system provides both land-access service and traffic circulation within residential neighborhoods and commercial and industrial areas. The collector street also collects traffic from local streets in residential neighborhoods and channels it into the arterial system. For a more complete definition of this system, see the AASHTO "Greenbook".

Common Excavation—Consists of all excavation not otherwise classified. See Section 203 of the NDDOT Standard Specifications for Roads and Bridges.

Culvert - A closed conduit for the free passage of water under an embankment.

Cut Section - A roadway section formed by excavating below the natural ground surface.

Design Exception - A deviation from the geometric or non-geometric design elements that does not meet AASHTO standards, policies, or standard specifications.

Design Flow - The flow rate at a selected recurrence interval or percent probability, generally in units of cubic feet per second (CFS).

Design Hourly Volume (DHV) - The future two-way (unless otherwise specified) hourly traffic volume. DHV is the thirtieth highest hourly volume, i.e., it is exceeded 29 times in the design year.

Design Level of Service (LOS) - The operating conditions that occur on the project for the DHV. Generally, the design is based on level of service C in urban areas and level of service B in rural areas.

Design Public Hearing - A hearing held by NDDOT to provide an opportunity for the public and other agencies to comment on the proposed improvements identified in the PCR, environmental Assessment, or Environmental Impact Statement, and to discuss and comment on the social, economic, environmental, or other areas of concern regarding the project.

Design Reliability - The probability that the pavement system will perform its intended functions over its design life.

Design Speed - The Highway Research Board defines this as: “a speed selected for purposes of design and correlation of those features of a highway such as curvature, super-elevation, sight distance upon which the safe operation of vehicles is dependent. It is the highest continuous speed at which individual vehicles can travel with safety upon a highway when weather conditions are favorable, traffic density is low, and the design features of the highway are the governing conditions for safety.”

Design Year - Normally, 20-40 years after the date of PS&E approval. See design philosophy for design periods for the various highway systems. Section I-06.

Discharge Rating Curve - A curve that expresses the relation between the discharge of a culvert, channel, or other drainage facility at a given location with the elevation of the water surface at that location.

Draft Environmental Impact Statement (DEIS) - A document prepared by the NDDOT, normally early in the project development process, to inform the EPA, FHWA, other federal agencies, State, regional, and local agencies, and the public, of significant effects upon the human environment and of possible “highly controversial actions,” and “decisions of cumulatively significant impact” when made over an extended period of time.

Edge Drain - A subsurface drain, normally constructed of a perforated PVC pipe wrapped in filter material, located at the edges of the traveled way in order to drain subsurface water away from the pavement structure.

Environmental Assessment (EA) - A document prepared by NDDOT, normally early in the project development process, to identify resources or features that may be significantly impacted by the project. Its primary purpose is to help the FHWA and NDDOT determine the need for an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

Expressway - See Freeway.

FHWA Concurrence - An agreement by FHWA with NDDOT that all essential elements of the proposed project are satisfactory and acceptable for preparation of plans, specifications, and estimates.

Fill Section - A highway embankment constructed with imported material excavated from the highway ditches or from a borrow area, i.e., a highway embankment constructed with fill material, generally above the natural ground surface.

Final Environmental Impact Statement (FEIS) - A document prepared by NDDOT, normally near the end of the project development process, after public hearings, etc., and prior to location approval, that justifies the final decision to build or not build the final route selection, alignment, and/or major design details, etc., of an approved project.

Finding of No Significant Impact (FONSI) - a document prepared by NDDOT to justify the contention that there will be no effect, or an insignificant effect, on the human environment if the project is completed.

Floodway - The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachments in order that the 100-year flood may be carried without substantial increases in flood heights.

Flood Plain - The area described by the *perimeter* of the design flood. That portion of the river valley that has been covered with water when the river overflowed its banks at flood stage. An area designated by a governmental agency as a flood plain.

Fly Ash Treated Subgrade - A treatment for subgrade stabilization whereby the top 6 to 12 inches of the subgrade is scarified, mixed with fly ash and water, and recompacted.

Fogcoat - A light application of liquid asphalt material placed on an asphalt pavement, generally to seal a porous surface, sometimes followed by application of blotter sand.

Foreslopes - The area between the edge of the graded shoulder and the inner edge of the highway ditch bottom, or the intersection of the highway embankment with the natural ground surface (for fill sections).

Freeway - A freeway is an expressway with full control of access. The highest type of arterial highway. An expressway is a divided arterial highway for through traffic with partial control of access and generally with grade separation at major intersections.

Frontage Road - Used to furnish access to properties along an expressway or freeway facility and to distribute traffic desiring to cross or enter the facility. They are local roads generally parallel to but isolated from the through facility, with connections to the through facility provided only at selected points, which preferably are grade-separated. Sometimes referred to as service roads.

Greenbook - The publication by AASHTO entitled "A Policy on Geometric Design of Highways and Streets," 2001 or latest edition. Also referred to in this manual as "*A POLICY*".

Highway Capacity Manual - Special Report 209 of the Transportation Research Board, National Academy of Sciences-National Research Council, 1994 or latest edition.

Hot Mix Asphalt (HMA) - A bituminous mixture produced by heating and mixing aggregates and bituminous material in a “batch” or “continuous flow drum” type hot plant.

Hot Recycled Bituminous Mixture - A bituminous mixture produced by heating and mixing crushed recycled asphalt pavement, virgin aggregate, asphalt cement, and/or recycling agent in a “batch” or “drum” type hot plant.

Leveling Course - One or more lifts of variable thickness of a bituminous mixture placed on the surface of an existing roadway to remove local unevenness in preparation for an overlay.

Lime Treated Subgrade - A treatment for subgrade stabilization whereby the top 6 to 12 inches of the subgrade is scarified, mixed with a hydrated lime slurry or pebble quicklime and recompacted.

Maintenance - Work of a short term nature or routine actions taken to maintain safe traffic operations or preserve the roadway and appurtenances. Work may include such items as striping, stockpiles, snow removal or ice control, mowing, drainage repairs, spot sealing or spot repair of pavement failures with bituminous material.

Maximum Probable Flood - The greatest flow that would occur under the most severe conditions. This flood is considered to have a recurrence interval much greater than 100 years.

New Construction - The construction of a new highway on a new location where a facility did not previously exist.

Overlay - A bituminous mixture (usually) of one or more lifts placed on an existing roadway to provide a new uniform, durable driving surface, or to increase its load capacity.

Plant Mix - A bituminous mixture produced by heating and mixing aggregates and bituminous material in a “batch” or “drum” type plant

Portland Cement Treated Base - A mixture of soil or aggregate, Portland cement, and water, of designated thickness, placed upon the subgrade to provide a suitable foundation for concrete pavement. See also Cement Treated Drainable Base.

Preventative Maintenance - Activities that extend the service life, or prevent accelerated deterioration, of an existing roadway. Work may include such items as sealing, or re-sealing, asphalt driving surfaces, and asphalt thin lift overlays or intermittent patching.

Project Concept Report (PCR) - A report, prepared by NDDOT, containing descriptions of the alternatives considered and a discussion of the anticipated social, economic, and environmental effects of the alternatives, and points out significant differences and the reasons supporting the proposed design. In addition, the report must include an analysis of the relative consistency of the alternatives with the goals and objectives of any urban plan that has been adopted by the community concerned.

A project concept report describes essential elements such as design standards, number of traffic lanes, access control features, general horizontal and vertical alignment, right-of-way requirements, and locations of bridges, interchanges, and other structures. It also contains a summary and analysis of the views received concerning the proposed undertaking and a list of any prior studies relevant to the undertaking. Appropriate maps or drawings of the design are available upon request

PS&E - Plans, Specifications, & Estimates. Refers to the field plan review of this name.

RRR (or 3R) Projects - Resurfacing, restoration, and rehabilitation work includes placement of additional surface material and/or other work necessary to return an existing roadway, including shoulders, bridges, the roadside, and appurtenances to a condition of structural or functional adequacy. Pertains to non-Interstate highways. (See definition of “R” terms below)

RRR (or I-3R) Projects - Resurfacing, restoration, and rehabilitation work to return the roadway to structural or functional adequacy. Pertains to Interstate highways. (See definition of “R” terms below. The R-1, R-2, etc. numbers refer to the four strategies of the I-3R program outlined more completely in the matrix attached to the I-3R design guides.)

Resurfacing (R-1) - Placing additional layers of surfacing on existing mainline and shoulders to extend the structural capacity for a period of 20 years.

Restoration (R-2) - Work to return the mainline, shoulders, and bridges to an acceptable condition for 10 or more years. Work may include such items as grinding, concrete pavement repair, sealing joints and shoulders, minor drainage correction, bridge deck overlay, etc.

Rehabilitation (R-3) - Major work to return the highway to an acceptable condition in order to extend the service life of the highway. Work may include such items as replace bridge decks, short sections of pavement repair, recycling asphalt, correct structural deficiency, minor subgrade work, etc.

Reconstruction – Regrading or restoring the roadbed and surface, or widening an existing roadbed on the existing highway location.

Record of Decision (ROD) - A document prepared by FHWA, as the final step in the EIS process, explaining the reasons for the project decision, summarizing any mitigation measures to be incorporated, and documenting any required Section 4(f) approval.

Recurrence Interval - The average interval between floods equal to or greater than a given magnitude. The reciprocal of the annual probability of occurrence.

Reference Points - Established points along highway alignments having known geographic coordinates and serving as control points for highway location references. Reference points were formerly referred to as mile points. They generally increase numerically from west to east and from south to north.

Road Mix - A bituminous mixture produced in place by mixing windrowed aggregate with bituminous material by means of a traveling mixer, motor grader, or other means.

Roadbed - The graded portion of a highway between the intersections of the top of the embankment and foreslopes, upon which the base course, surface course, and shoulders are constructed.

Roadside Design Guide - The publication by AASHTO entitled "Roadside Design Guide", dated January 1996, or latest edition.

Roadside Improvements - Facilities constructed off of the traveled roadway but within or near the right of way, intended to either improve the roadside environment or provide for alternative modes of transportation. Examples: Bikeway and pedestrian facilities, landscaping, parking.

Roadway - (General) The portion of a highway, including shoulders, for vehicular use. A divided highway has two or more roadways. (In construction specifications) The portion of a highway within the limits of construction.

Safety Improvements - Work activities which would provide for improved traffic operations, motorist guidance, upgrading of obsolete roadside features, and improvement of roadside geometry related to safety. Examples: Foreslope flattening with culvert extensions, approach slope flattening, guardrail.

Seal Coat - A type of asphalt surface maintenance where a liquid asphalt is sprayed on the driving surface, followed by an application of cover aggregate, for the purpose of protecting the surface from weathering and traffic wear.

Section 4(f) - Section 4(f) of the Department of Transportation Act of 1966 (Public Law 89-670) as amended by Section 18b of the Federal-Aid Highway Act of 1968 (Public Law 90-495) and is identical to both Section 138, Title 23, United States Code, and Section 1653(f), Title 49, United States Code.

Section 4(f) Lands - Those lands described in Section 4(f) of the Department of Transportation Act of 1966. These include publicly owned lands having national, state, or local significance and that contain public parks, recreation areas, wildlife refuges, and/or waterfowl refuges.

Section 4(f) lands also include historic sites that are publicly or privately owned. Historic sites are those listed on or eligible for the National Register of Historic Places, and those recognized by a state or local historic preservation agency, if FHWA concurs.

Section 6(f) - Refers to a portion of the 1965 Land and Water Conservation Fund Act (L&WCF). This act provides federal grants to communities to be used for acquiring or improving lands for recreation uses.

Transportation projects that acquire land that has received a Section 6(f) grant are considered to be converting the use of the land. When this occurs, the city or state (whichever developed the project) must acquire replacement lands. See II-05.05.4.

Section 106 - Refers to a section of the National Historic Preservation Act (NHPA). Commonly referred to as the 106 process. The 106 process is undertaken to identify sites, buildings, structures, or objects 50 years old or older; fairly unaltered, with important information potential, or associated with historically significant persons or events; which may be affected by the project. If the resource is evaluated as eligible to the National Register of Historic Places, efforts are made to avoid, minimize, or mitigate the effects of the project. See Appendix II-05B.

Shoulder - Generally, that portion of the roadway top lying outside of the driving lanes, and may be earth, or surfaced with gravel or higher type of surfacing material.

Sight Distance - The length of roadway ahead visible to the driver. The minimum sight distance available on a roadway should be sufficiently long to enable a vehicle traveling at or near the design speed to stop before reaching a stationary object in its path. Although greater length is desirable, sight distance at every point along the highway should be at least that required for a below-average operator or vehicle to stop in this distance.

Stabilized Shoulder - A shoulder consisting of a bituminous mixture, concrete pavement, a mixture of aggregate, water, and calcium chloride, or a combination of these.

Subgrade - The uppermost earth material placed in embankments or unmoved from cuts in the normal grading of the roadbed, generally considered to be the topmost 18 to 24 inches.

Subgrade Line - The top of the subgrade, i.e., the top line of the graded roadbed at the roadway centerline.

Subgrade Modification - The scarifying, addition of aggregate and additives (water or calcium chloride), if required, mixing, and recompact of a roadbed. It is also the addition, mixing, and compaction of aggregate with material obtained from ditches and shoulder slopes.

Superelevation - Cross slope of the roadway driving surface used to counteract the centrifugal forces exerted on vehicles when driving on horizontal curves.

Surface Course - A designated thickness of material placed upon a base course or other suitably prepared foundation (including earth subgrades) to provide a durable, uniform riding surface. This may be a bituminous mixture or concrete pavement.

Tack Coat - A light application of liquid bituminous material applied to an existing surface and/or the surface of intermediate lifts of a bituminous mixture to provide a bond for the following lift.

Thalweg - The line extending down a channel that follows the lowest elevation of the stream bed.

TS&L - Type, Size, & Location. Refers to preliminary field inspection for structural projects during which preliminary structural proposals are reviewed.

Virgin Aggregate - New aggregate material, obtained from an aggregate pit, that has not been previously used for construction purposes.

Windrow - As related to highways, a continuous longitudinal pile of aggregate or other construction material on the roadway surface. Or the act of making a continuous longitudinal pile of material with a motor grader or other similar equipment.